OCR
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OCR A Level Computer Science

H446 – Paper 1

5

Defining and updating tables using SQL

Unit 4
Exchanging data

PG ONLINE

Objectives

- Be able to use SQL to define a database table
- Be able to use SQL to update, insert and delete data from multiple tables of a relational database

Creating a new table using SQL

- SQL may be used to define and create a new table
- Here is an example:

```
CREATE TABLE tblProduct
(
ProductID  CHAR(4) NOT NULL, PRIMARY KEY,
Description     VARCHAR(20) NOT NULL,
Price    CURRENCY
  )
```

- Notice how the primary key is defined
  - Two of the fields in this example cannot be left blank when data is added to the table

Common data types

Data type	Description	Example
CHAR(n)	Char string of fixed length n	ProductCode CHAR(6)
VARCHAR(n)	Character string variable length, max. n	Surname VARCHAR(25)
BOOLEAN	TRUE or FALSE	ReviewComplete BOOLEAN
INTEGER, INT	Integer	Quantity INTEGER
FLOAT	Number with a floating decimal point	Length FLOAT (10,2) (maximum number of digits is 10 with max. 2 after decimal point)
DATE	Stores Day, Month, Year values	HireDate DATE
TIME	Stores Hour, Minute, Second	RaceTime TIME
CURRENCY	Formats numbers in the currency used in your region	EntryFee CURRENCY

Altering a table structure

- The ALTER TABLE statement is used to add, delete or modify columns in an existing table
- To add a new column:

```
ALTER TABLE tblProduct
    ADD QtyInStock INTEGER
```

Delete or alter a table structure:

- To delete a column:

```
ALTER TABLE tblProduct
    DROP QtyInStock
```

- To change the data type of a column:

```
ALTER TABLE tblProduct
MODIFY COLUMN Description VARCHAR (30) NOT NULL
```

Defining linked tables

- In this example we will create three linked tabl

Product (ProductID, Description, Price)
ProductComponent (*ProductID*, *CompID*, Quantity)
Component (CompID, CompDesc, Cost)

- The ProductComponent table is defined as shown:

```
CREATE TABLE ProductComponent
( ProductID    CHAR(4) NOT NULL,
      CompID  CHAR(6) NOT NULL,
      Quantity INTEGER
      FOREIGN KEY       ProductID REFERENCES Product(ProductID)
      FOREIGN KEY       CompID REFERENCES Component(CompID)
```

Worksheet 5

- Do **Tasks 1 and 2** on the worksheet

Inserting data using SQL

- The INSERT INTO statement is used to insert a new record into a table, for example the Product table, which is defined as shown below:

```
ProductID  CHAR(4) NOT NULL, PRIMARY KEY
Description    VARCHAR(20) NOT NULL
Price    CURRENCY
```

- Insert a new record for ID A345, “Pink rabbit”, £7.50:

```
INSERT INTO Product (ProductID, Description, Price)
VALUES (“A345”, “Pink Rabbit”, 7.50)
```

- Note that you do not need to specify the field names in the top line if data is being added to

Updating data using SQL

- The UPDATE statement is used to update a record in a table, for example the Product table:

```
ProductID  CHAR(4) NOT NULL, PRIMARY KEY
Description     VARCHAR(20) NOT NULL
Price    CURRENCY
```

- To update record for product ID A345, changing the description to “Blue Rabbit” and the price to £8.25:

```
UPDATE Product
SET Description = “Blue Rabbit”, Price = 8.25
WHERE ProductID = “A345”
```

Deleting a record using SQL

- The DELETE statement is used to delete a record in a table, for example the Product table:

```
ProductID  CHAR(4) NOT NULL, PRIMARY KEY
Description    VARCHAR(20) NOT NULL
Price    CURRENCY
```

- To delete record for product ID A345:

```
DELETE FROM Product
WHERE ProductID = “A345”
```

Worksheet 5

- Do **Task 3** on the worksheet

Plenary

- You need to be able to :
- write SQL statements to CREATE, ALTER, INSERT INTO, UPDATE, DELETE database tables and records

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